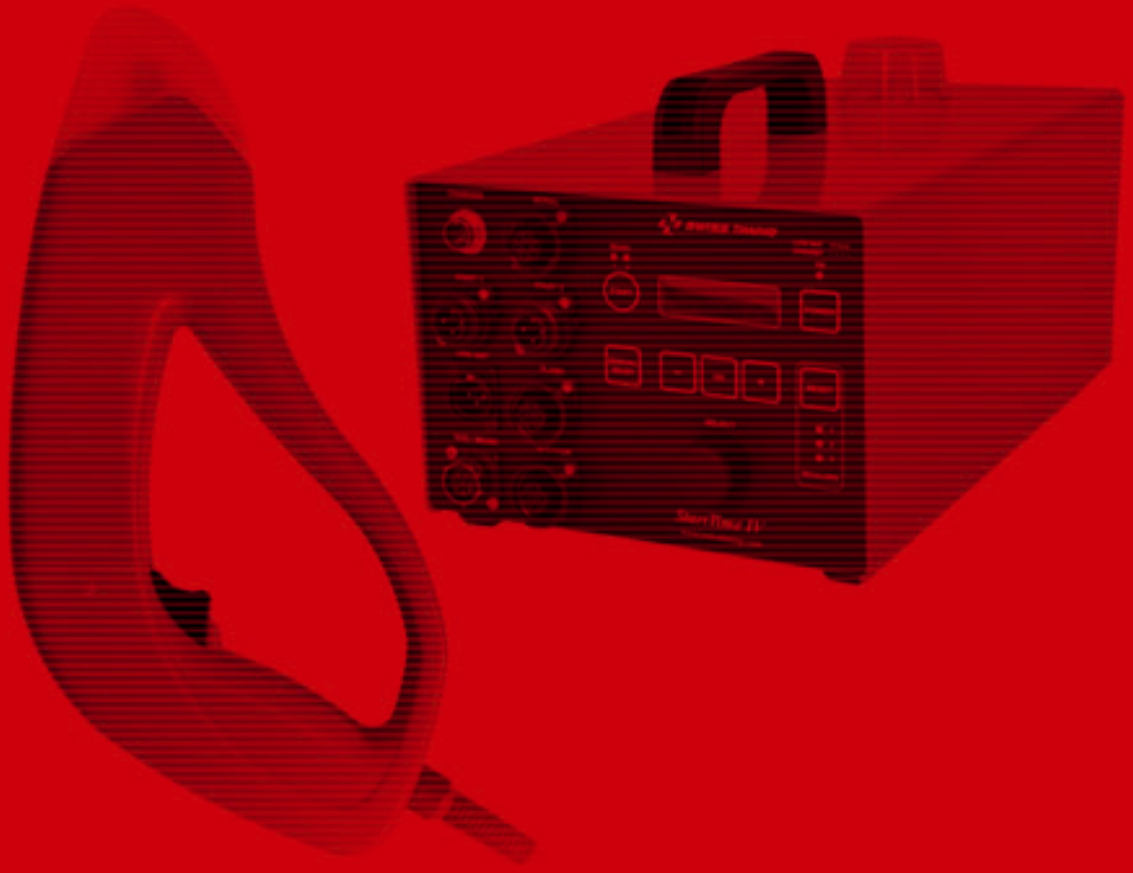
SWISS TIMING

MULTISPORTS



E-GUN / STARTTIME IV

User's Manual

3481.501.02

Version 1.1

Edition August 2011

Caution and safety precautions

- Never use any other charger than the supplied or a type approved by Swiss Timing. This could destroy the battery, cause damage to unit, and possible cause personal injury due to fire or/and electrical shock.
- Never bypass a power cord ground lead by breaking off the ground pin, or by using inappropriate extension cords or adapters.
- Never plug a power cord into the AC power source until you have made sure that all installation, cabling and power levels, are proper, and that the applicable procedures in this manual have been followed.
- Protect the equipment against splashing, rain and excessive sun rays.
- Never use the device if it is damaged or insecure.
- Verify the selection of the power distribution.
- Verify that the voltage quoted on the rating plate is the same as your voltage. Connect the appliance only to power sockets with protective earth. The use of incorrect connection voids warranty.
- This program may be modified at any time without prior notification.
- Do not open the case; there is nothing that needs servicing inside it. Nevertheless, if the case must be opened, you must call for some qualified personnel. The power supply cable must be disconnected before opening the case.
- During the transport of all Swiss Timing equipment delivered with a reusable carry case, the said case should be used at all times. This is imperative to limit the damage, such as shocks or vibration that can be caused to the units during transport.
- The same cases should also be used when returning equipment to Swiss Timing for repair. Swiss Timing reserves the right to refuse all guarantees if this condition is not fulfilled.
- If the installation includes a horn, be sure to maintain a sufficient security distance from the public.

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Environment

This symbol indicates that this product should not be disposed with household waste. It has to be returned to a local authorized collection system. By following this procedure you will contribute to the protection of the environment and human health. The recycling of the materials will help to conserve natural resources.

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P.O. Box 138, rue de l'Envers 1
2606 Corgémont, Switzerland
www.swisstiming.com
Phone +41 32 488 36 11
Fax +41 32 488 36 09
info@swisstiming.com

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P.O. Box 138, rue de l'Envers 1
2606 Corgémont, Switzerland
www.swisstiming.com
Phone +41 32 488 36 11
Fax +41 32 488 36 09
info@swisstiming.com

1 INTRODUCTION

1.1 Concept

The electronic start system *StartTime IV* is used in several sport like athletics (AT), swimming (SW), Speed Skating (SS) with Start & Microphone unit (SMU) or e-GUN.

The electronic start system is composed of a flash gun and a sound generation box.

When the starter active the gun trigger, simultaneously, a sound is played, a flash is emitted and a start pulse is given to the timing device.

By pressing the trigger a second time within a programmable delay, the false start sound will be played. The sounds can be changed / downloaded by a computer with a RS422 serial line.

StartTime IV has 2 started out connections, a telephone line allowing to connect a telephone headset for better communication and can manage up to 3 different sports or disciplines.

It also features a multifunction LCD display, an enhanced internal amplifier, a keypad to select from the various setup possibilities, a high fidelity loudspeaker and an integrated optical flash.

A line out allows optional loudspeakers to be connected to deliver the start signal as close as possible and simultaneously to each athlete.

A microphone unit enables the starter to give the start signal while amplifying all the verbal commands.

Two LEDs indicators on the microphone unit show the status of the timer device.

The *StartTime IV* unit also features the connectivity for an optional external microphone and headset.

StartTime IV can be paired with the brand new e-GUN electronic starting device.

The new generation flash gun replaces powder gun and transducer to signal the start to the athletes and trig the timing devices.

1.2 Rear panel

StartTime IV rear panel is divided in two parts. On the left is connection area and on the right command keypad with display.

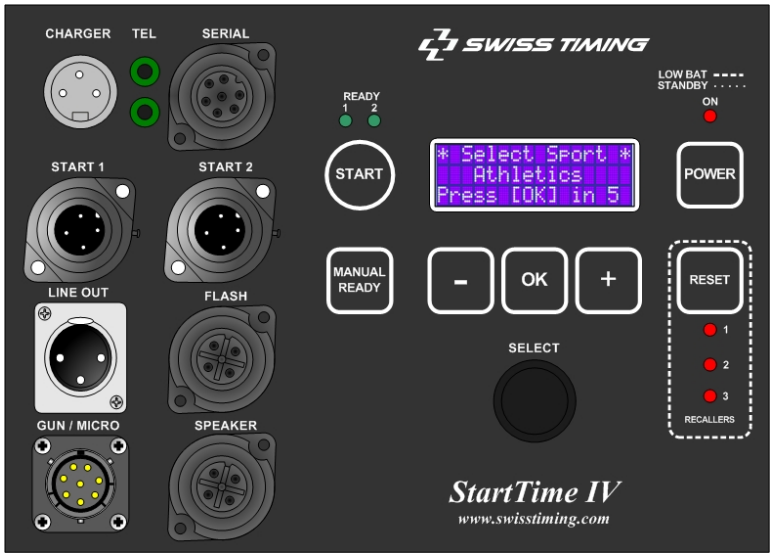


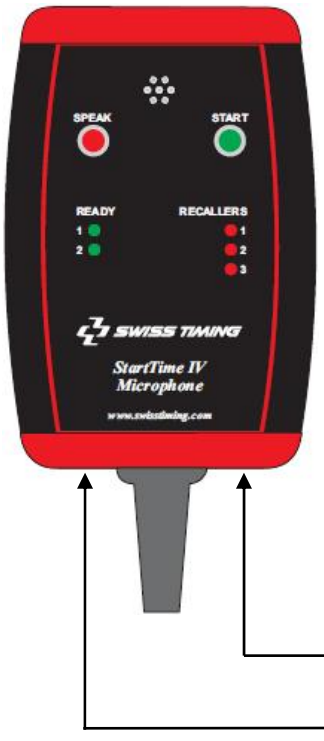
Figure 1 - StartTime IV rear face

Connector	*Description*
CHARGER	Charger input for internal battery
TEL	Connection to Swiss Timing telephone line
SERIAL	Serial line to download new sounds or special functions
START 1	Connection to the main timing device (MAIN / PRIMARY).
START 2	Connection to an additional timing device (BACKUP / SECONDARY).
LINE OUT	Connection to external amplifier with dedicated speaker.
FLASH	Connection to external flash(es)
GUN/MICRO	Connection to the ℮-GUN or SMU
SPEAKER	Connection to external loudspeaker(s).

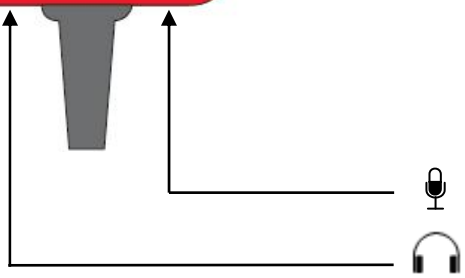
Key	*Description*
START	Key to start race if ℮-GUN or SMU are not used (Independent operation)
POWER	Power ON (>0.5 sec.) and OFF (>1 sec.)
MANUAL READY	Allow field starter to force READY from control room
- and **+**	Keys to move from one to another menu or set up
OK	Key to enter and exit of the set up menu
RESET	Reset recallers
SELECT	Knob to select value in menu or set up

LED	*Description*
READY 1 / 2	Ready status of TIMER 1 and 2
RECALLERS 1-3	Status of starter recaller (AT)

1.3 Start & Microphone unit (SMU)



SPEAK	Allow starter to connect microphone to loudspeaker output or TEL line
START	Allow starter to start the TIMER
READY 1	Ready status of TIMER 1
READY 2	Ready status of TIMER 2
RECALLERS 1-3	Status of starter recaller (AT)



External microphone

External headset

Figure 2 – SMU

1.4 E-Gun

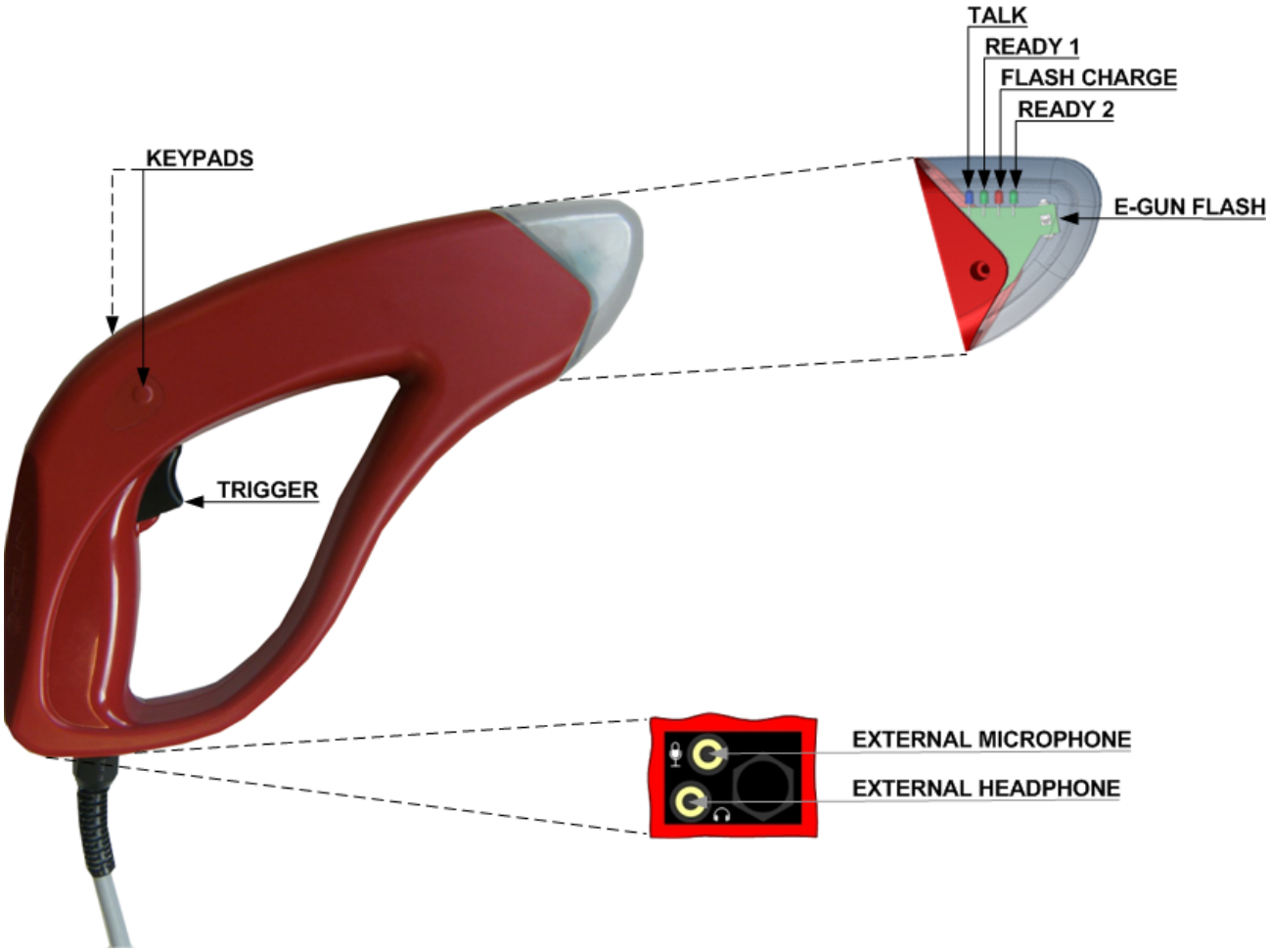


Figure 3 – E-GUN

LED / Key	*Description*
TALK	Indication of the selected audio channel
	● Mode SPEAK selected
	((●)) Mode TEL selected
READY 1	Indication that the main timing device is ready (MAIN / PRIMARY)
READY 2	Indication that the additional timing device is ready (BACKUP / SECONDARY)
FLASH CHARGE	● Indication that the flash system is recharging
	((●)) Mode TEST selected
KEYPADS	Allow starter to select the audio channel
	1x Mode SPEAK
	2x (quickly) Mode TEL
	+ 1x Mode TEST
TRIGGER	Allow starter to start the TIMER

2 INSTALLATION

2.1 Connecting the installation

Connections have to be made at the rear of *StartTime IV* .
Some connections are mandatory and some depends of the use:

2.1.1 Connections overview

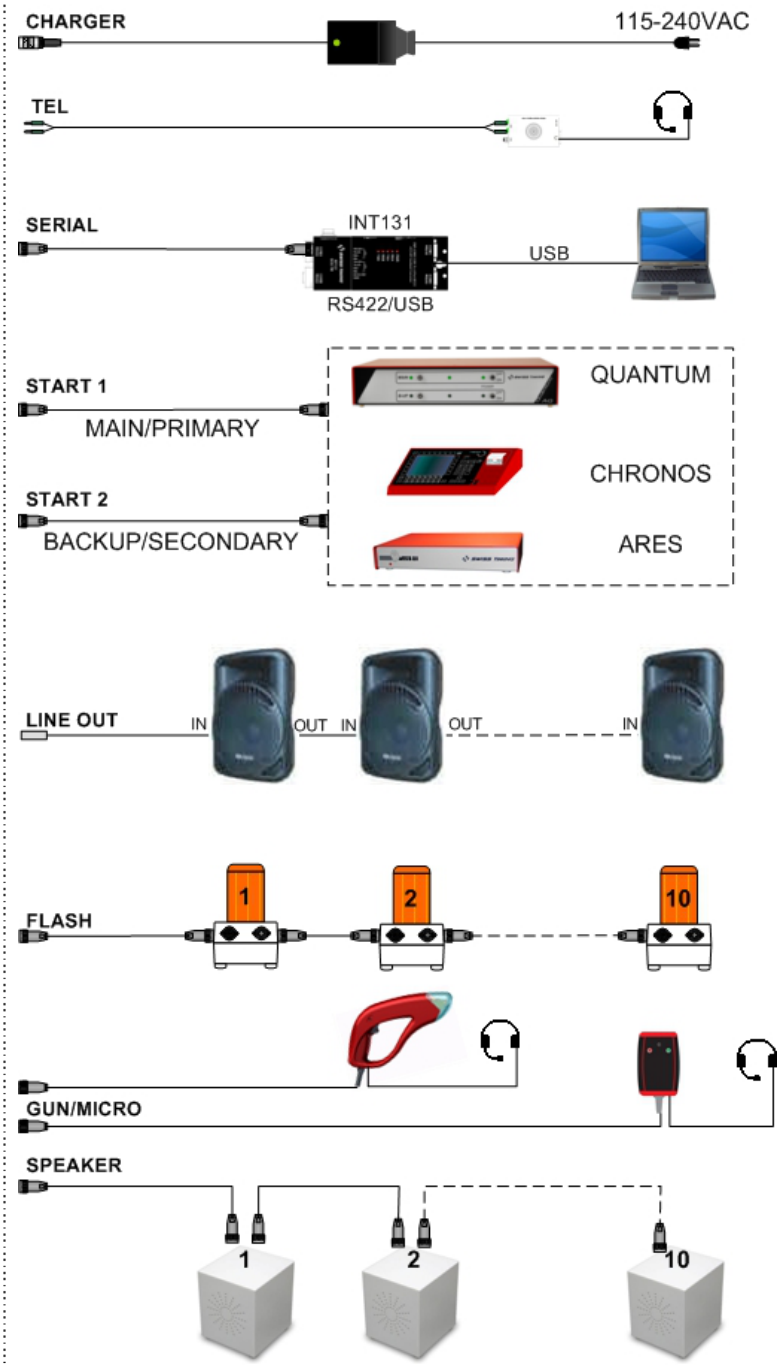
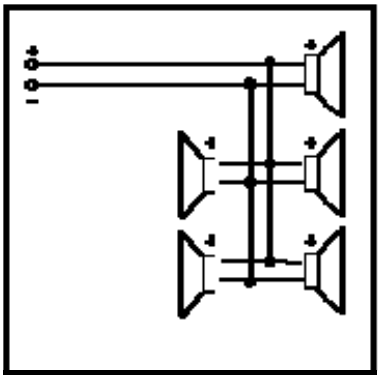


Figure 4 - Connecting the installation

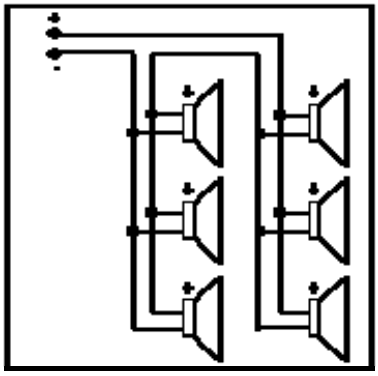
2.1.2 External loudspeakers connection

The minimum recommended load per amplifier is 3.2 Ohms and the maximum is 16Ohms.
It's possible to use a load of 2 Ohms but will result in increased distortion and loss of output power.
Any combination that gives a total load of between 3.2 and 16 Ohms is acceptable.
Note the phase (+ sign or Red dot) of the speakers, or loss of sound quality will occur.
Note: never connect the two speaker outputs together in any way or connect them to ground. This may cause severe damage to the amplifiers.

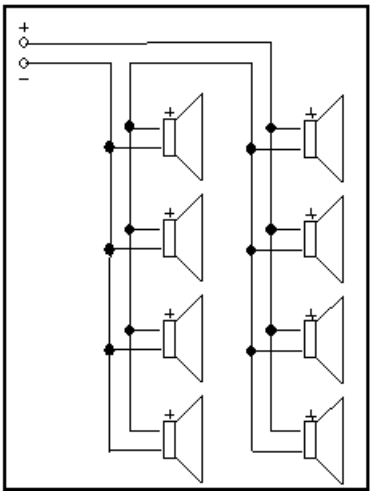
Examples of loudspeaker connection:



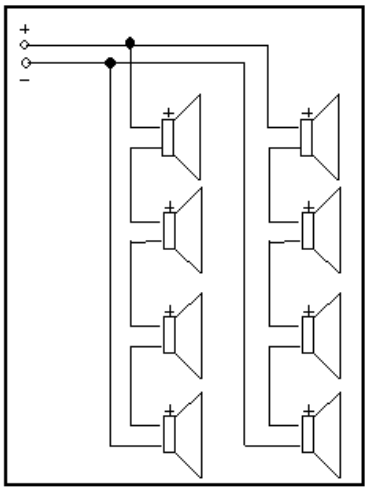
5 Speakers of 16 Ohms each
Total load of 3.2 Ohms



6 Speakers of 16 (8) Ohms each
Total load of 10.6 (5.3) Ohms



8 Speakers of 16 (8) Ohms each
Total load of 8 (4) Ohms



8 Speakers of 4 (8) Ohms each
Total load of 8 (16) Ohms

2.1.3 Extension cables

The **microphone cable** may be extended to 30 Meters.
If extended further, noise and ”hum” may distort the signal.
No damage to the unit will happen although.

The **loudspeaker cables** can be extended up to 30 meters with 0.75mm² cable or 50 meters with 1 or 1.5mm² cable.
If extended further, loss of sound quality may occur, but no damage will be caused.
Beware of polarity of speakers, or loss of sound quality will result.

2.2 Operation

2.2.1 Stand Alone Operation with TIMER (Quantum, Chronos, ARES)

1. Connect @-GUN or SMU to **GUN/MICRO**
2. Connect the cable from TIMER to **START 1**.
3. Turn the unit ON by pressing the POWER key (>0.5sec.).

   SMU : LEDs are tested and Recallers LEDs blink till sport selection is made.

   @-GUN : LEDs are tested and then red LED blinks till sport selection is made
4. Select your sport (Athletics, Swimming, Speed Skating or Custom)
   After 5 seconds, sport will be automatically selected to your last used.

   SMU : ST4 power lamp will light up and red LED SPEAK in the microphone should be lit.

   @-GUN: ST4 power lamp will light up.

   If the TIMER is cleared and ready for start or SETUP [6] and/or SETUP [7] don't use READY, ST4 / @-GUN / SMU LEDs READY 1-2 would be lit as well.
5. Adjust the volume button on the *StartTime IV* to an appropriate level.
6. Check if **READY** signal green LED (ST4 / @-GUN / SMU) is on.
7. Press the **TRIGGER** (@-GUN) or **START** (SMU) button
8. One signal should sound from the loudspeaker(s), and the TIMER should be activated.
   If a false start is to be announced, press the **TRIGGER** (@-GUN) or **START** (SMU) button again within time selected in SETUP [9].
   False start signal(s) SETUP [2] and SETUP [10] will be heard
   The level of the start / false start signal can be adjusted on the main unit.

The unit cannot be started, if one of SETUP [6] or SETUP [7] is selected to YES, and TIMER is not cleared.

The false start signal is only functional if SETUP [9] is selected from 1 to 60 seconds. Select SETUP [9] to. Disabled if false signal is not used.

2.2.2 Stand Alone Operation (PowerTime)

First use ONLY
Set SETUP [6] and SETUP [7] to NO.

1. Connect @-GUN or SMU to **GUN / MICRO**
2. Connect the cable from PowerTime to **START 1**.
3. Turn the unit ON by pressing the POWER key (>0.5sec.).

   SMU : LEDs are tested and Recallers LEDs blink till sport selection is made.

   @-GUN: red LED blinks till sport selection is made
4. Select your sport (Athletics, Swimming, Speed Skating or Custom)
   After 5 seconds, sport will be automatically selected to your last used.

   SMU : ST4 power lamp will light up and red LED SPEAK in the microphone should be lit.

   @-GUN: ST4 power lamp will light up
5. Adjust the volume button on the *StartTime IV* to an appropriate level.
6. Press the **TRIGGER** (@-GUN) or **START** (SMU) button
7. One signal should sound from the loudspeaker(s), and the TIMER should be activated.
   If a false start is to be announced, press the **TRIGGER** (@-GUN) or **START** (SMU) button again within time selected in SETUP [9].
   False start signal(s) (SETUP [2] and SETUP [10]) will be heard.

2.2.3 Independent Operation

It is possible to use the *StartTime IV* without @-GUN or SMU.
In this case, it is only possible to carry out starts and false starts with the "START" button of the ST4

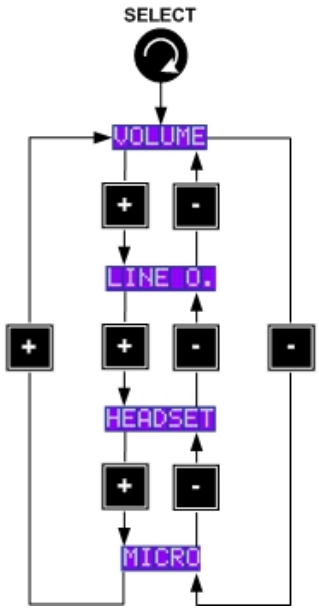
First use ONLY
Set SETUP [6] and SETUP [7] to NO.

1. Turn the unit ON by pressing the POWER key (>0.5sec.).
2. Press the START key for the start.
3. If a false start is to be announced, press the START key again within time selected in SETUP [9] and several signals will be heard (Depending on SETUP [2] and SETUP [10] selection).

2.2.4 Audio levels

There is possibility to adjust 4 audio levels:

VOLUME	Level of internal and external loudspeakers
LINE O.	Level of LINE OUT
HEADSET	Level of optional headset
MICRO	Level of microphone (SMU unit or Headset micro)



Turn SELECT knob button and adjust VOLUME to the desired level.

Use + and - to select other audio and adjust level with SELECT.

2.2.5 Battery level

	Battery is full charged.
	Battery is half charged.
	Battery is empty; connect the charger as soon as possible.
BLINK	Battery is empty, connect the charger urgently.

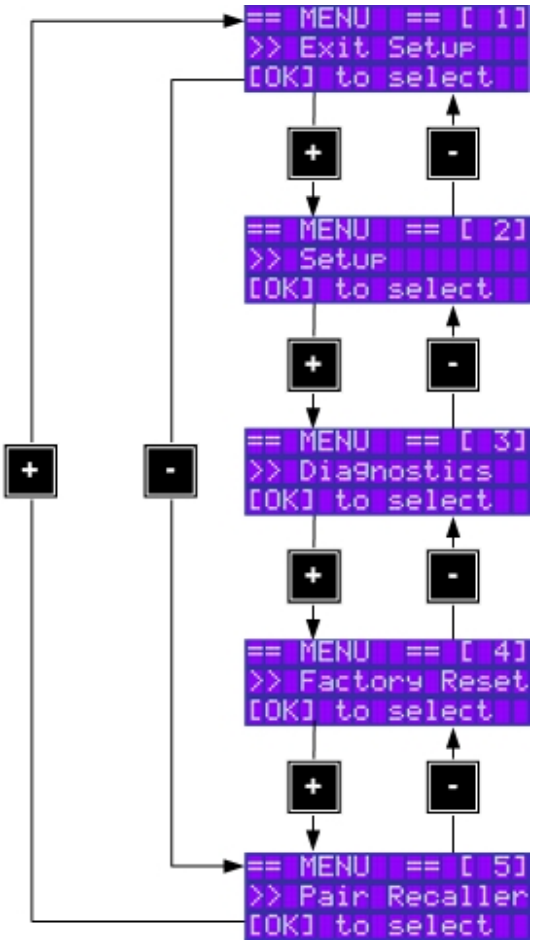
3 GETTING STARTED

3.1 First use

Read chapter 3 and select desired configuration and connect the *StartTime IV* charger.

3.2 Main Menu

You can access the Setup, Diagnostics and Factory Reset menus by pressing OK



Chapter 3.3

Chapter 3.4

Chapter 3.5

Chapter 3.6

Chapter 3.7

3.3 Exit Set Up

This menu allows exiting menu.

3.4 Set Up menu

Set Up menu allows the user to define particular settings adapted to its own use.
To navigate in the menu, use following buttons:

OK	To enter and exit of the set up menu
- / +	To move from one to another set up
SELECT	To select value in the set up menu

If setup is modified in AT, SS or SW, sport selection is automatically changed to CUS and Set Up values are transferred.

3.4.1 SETUP [1] Start Sound

Allows selecting the sound type of Start signal

3.4.2 SETUP [2] False Sound

Allows selecting the sound type of False Start signal

3.4.3 SETUP [3] Flash Output

Select the output contact of the FLASH connector to Normally open N.O. or Normally closed N.C.

3.4.4 SETUP [4] Start 1 Output (Main / Primary)

Select the output contact of the START 1 connector to Normally open N.O. or Normally closed N.C.

3.4.5 SETUP [5] Start 2 Output (Backup / Secondary)

Select the output contact of the START 2 connector to Normally open N.O. or Normally closed N.C.

3.4.6 SETUP [6] Ready 1 Needed (Main / Primary)

If you want to authorize start from the Main/Primary TIMER installation (control room), select the setup to YES.

The system, when connected to timing devices such as Quantum, Chronos or ARES, gives a high level of security with the **READY** indicator.

That is to say it may be deactivated from the Control Room if the Timing Technician is not ready to accept a start signal

3.4.7 SETUP [7] Ready 2 needed (Backup / Secondary)

If you want to authorize start from the Backup/Secondary TIMER installation (control room), select the setup to YES.

The system, when connected to timing devices such as Quantum, Chronos or ARES, gives a high level of security with the **READY** indicator.

That is to say it may be deactivated from the Control Room if the Timing Technician is not ready to accept a start signal

3.4.8 SETUP [8] Recaller mode

Recallers units are used if help starters are authorized to announce false start, If you have recallers units, select YES.

3.4.9 SETUP [9] Auto Ready

Time in seconds (1-60) where starter or recallers are authorized to give a false start after a start.

If you do not need this set up, you can select the Disabled value.

3.4.10 SETUP [10] False Signals

Define number of false start signal (1 - 4) generated when a false start is activated.

3.4.11 SETUP [11] Standby

Value in minutes of automatic Standby if *StartTime IV* is not used.

The system authorizes a **start** in standby mode.

If you do not need this set up, you can select the Disabled value.

3.4.12 SETUP [12] Power off

Value in minutes of automatic Power off if *StartTime IV* is not used.

If you do not need this set up, you can select the Disabled value.

3.4.13 SETUP [13] Radio Frequency channel

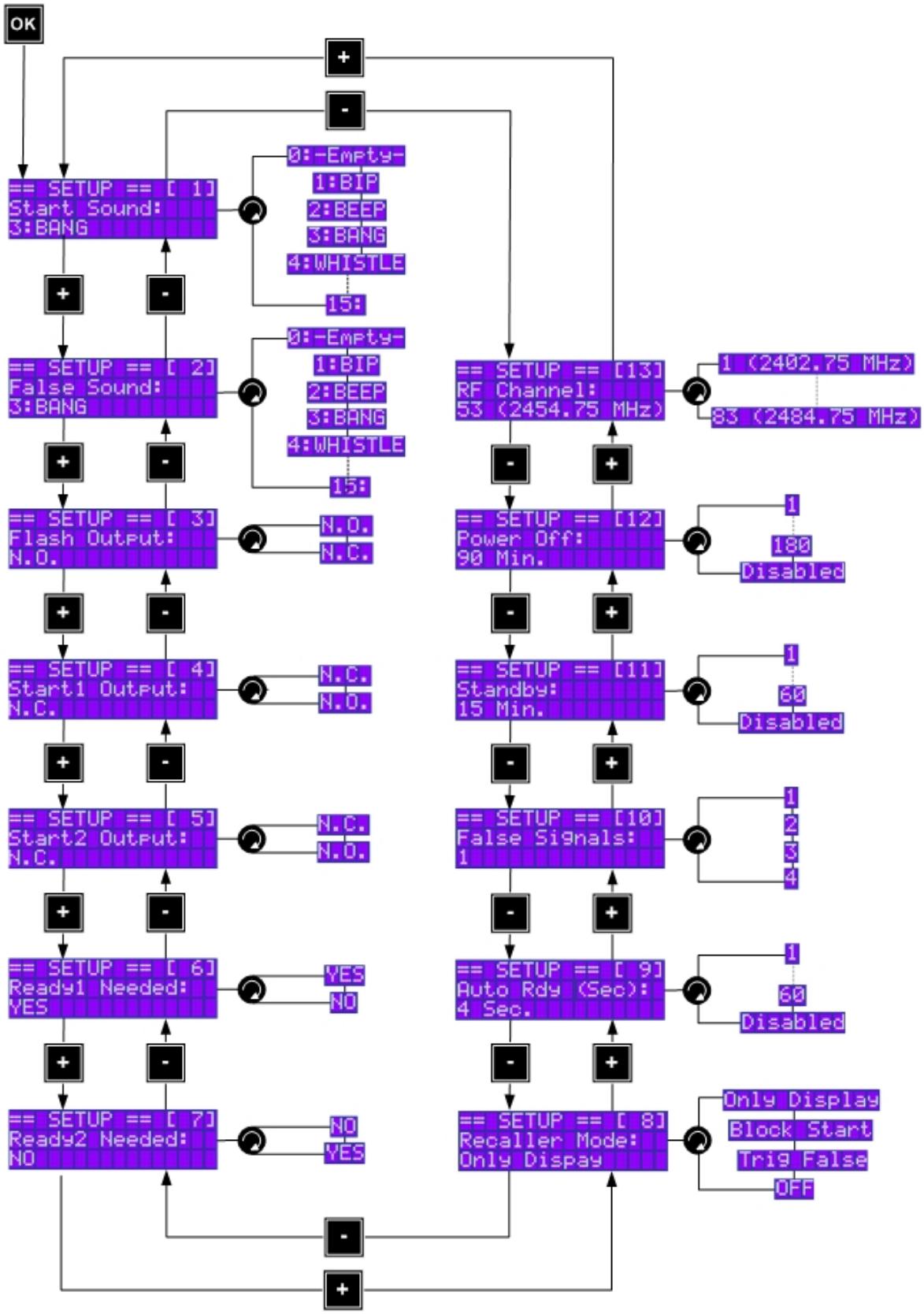
Wireless system is used with recallers and If you meet some transmission problem with RF53, you have possibility to select another channel (1 / 2402.75MHz to 83 / 2484.75MHz).

3.4.14 Factory settings

		Protected Set Up			
Setup	*Description*	**AT**	**SW**	**SS**	**CUS**
1	Start Sound:	BANG	BIP	BANG	BANG
2	False Sound:	BANG	BEEP	WHISTLE	BANG
3	Flash Output:	N.O.	N.O.	N.O.	N.O.
4	Start1 Output:	N.C.	N.C.	N.O.	N.C.
5	Start2 Output:	N.C.	N.C.	N.O.	N.C.
6	Ready1 Needed:	YES	YES	YES	YES
7	Ready2 Needed:	NO	NO	NO	NO
8	Recaller mode:	Only Display	OFF	Only Display	Only Display
9	Auto Rdy (Sec):	4 Sec.	4 Sec.	19 Sec.	4 Sec.
10	False Signals:	1	4	1	1
11	Standby:	15 Min.	15 Min.	15 Min.	15 Min.
12	Power Off:	90 Min.	90 Min.	90 Min.	90 Min.
13	RF Channel:	53 [2454.75 MHz]	53 [2454.75 MHz]	53 [2454.75 MHz]	53 [2454.75 MHz]

If setup is modified in AT, SS or SW, sport selection is automatically changed to CUS and Set Up values are transferred.

3.4.15 Menu Set Up navigation



3.5 Diagnostics

The Diagnostics menu allows setting several functions of the *StartTime IV*.

3.6 Factory Reset

The Factory Reset menu allows the resetting of the factory parameters (see chapter 3.3). Press on OK to confirm.

Factory Reset is possible only if CUS sport is selected.

3.7 Pair Recaller

4 ELECTRICAL PROPERTIES

4.1 Power supply

Use only charger supplied or a type approved by SWISS TIMING.This could destroy the battery, cause damage to unit, and possible cause personal injury due to fire or/and electrical shock.

4.2 Connectors pinning

Description	*Connector type*	*Pin*	*Pin description*
MICROPHONE E-GUN	UTG / UTS 8pFT	A	RS485 – serial line
		B	RS485 + serial line
		C	CmdFlash-
		D	GND (Signal)
		E	Power +12VDC
		F	GND (Power)
		G	Line - audio
		H	Line + audio
START 1 START 2	Tuchel 4pMT	1	Ready signal from TIMER (-)
		2	Start to TIMER
		3	Start to TIMER
		4	Ready signal from TIMER (+)
FLASH	Tuchel 4pFT	1	Power feed for Flash (+12V)
		2	Start Out Flash
		3	Start Out Flash
		4	Power feed for Flash (0V)
SPEAKER	Tuchel 4pFT	1	Speaker Plus (+) of Amplifier #1
		2	Speaker Minus (-) of Amplifier #1
		3	Speaker Plus (+) of Amplifier #2
		4	Speaker Minus (-) of Amplifier #2
LINE OUT	XLR 3pMT	1	GND
		2	Balanced line +
		3	Balanced line -
CHARGER	Tuchel 3pMT	1	Battery (+)
		2	Not used
		3	Battery (-)

5 PROPERTIES

5.1 Dimensions and weights

Main unit dimensions:	376 x 215 x 245mm w/o Connectors
Microphone dimensions:	118 x 25 x 80 mm. + 7 meter cable
E-GUN dimensions	280 x 35 x 140 mm + 7 meter cable
Alarm "low battery":	Yes, 4 levels indicated as battery symbol (Empty, Low, Medium, Full)
Protection class:	IP41
Power:	Built in 12 Volt / 7 Ah Sealed lead-acid battery
Standby time:	24 Hours (1000 starts). After this, the unit should still be operable for 1 hour. The self-discharge time is approximately 12 months if not in use. An external 12V Lead/Acid battery (car battery) connected to the charger input, could be used if extended operation time is needed.
Charger:	Max. initial current: 1.0 Ah (only for use in dry environment).
Speakers:	Load 3.2 - 16 Ohms
Output speakers:	@13.2 Volts, 3.2 Ohms, 1 kHz Typical: 2 * 13 Watt with < 1 % Distortion Maximum: 2 * 19 Watts with 10 % Distortion
Storage temperature:	-20ºC to +65ºC
Working temperature:	-10ºC to +65ºC
Relative humidity:	(20%-80%) without condensation

6 OPTIONS

6.1 Auxiliary flash

Optical signalling device for the start connected directly to the *StartTime IV*, it can be positioned to one's liking near the deaf athlete.

6.2 External loudspeaker

For mobile installations, place the speakers as follows:

3399.9xx.03	1 speaker per line
3399.9xx.06	1 speaker for 2 lanes

This layout allows all swimmers to hear the start simultaneously.

7 MAINTENANCE AND PROTECTION

7.1 Fuses

There are three Car type fuses and one fuse 5x20 mm in the unit:

F1 = 2 AT slow. (Charger input / Car type)
F2 = 7.5 AT slow. (Amplifier / Car type)
F3 = 2 AT slow (Logic / Car type)
F4 = 6.3 Ah slow. (Located on battery cable / 5x20mm)

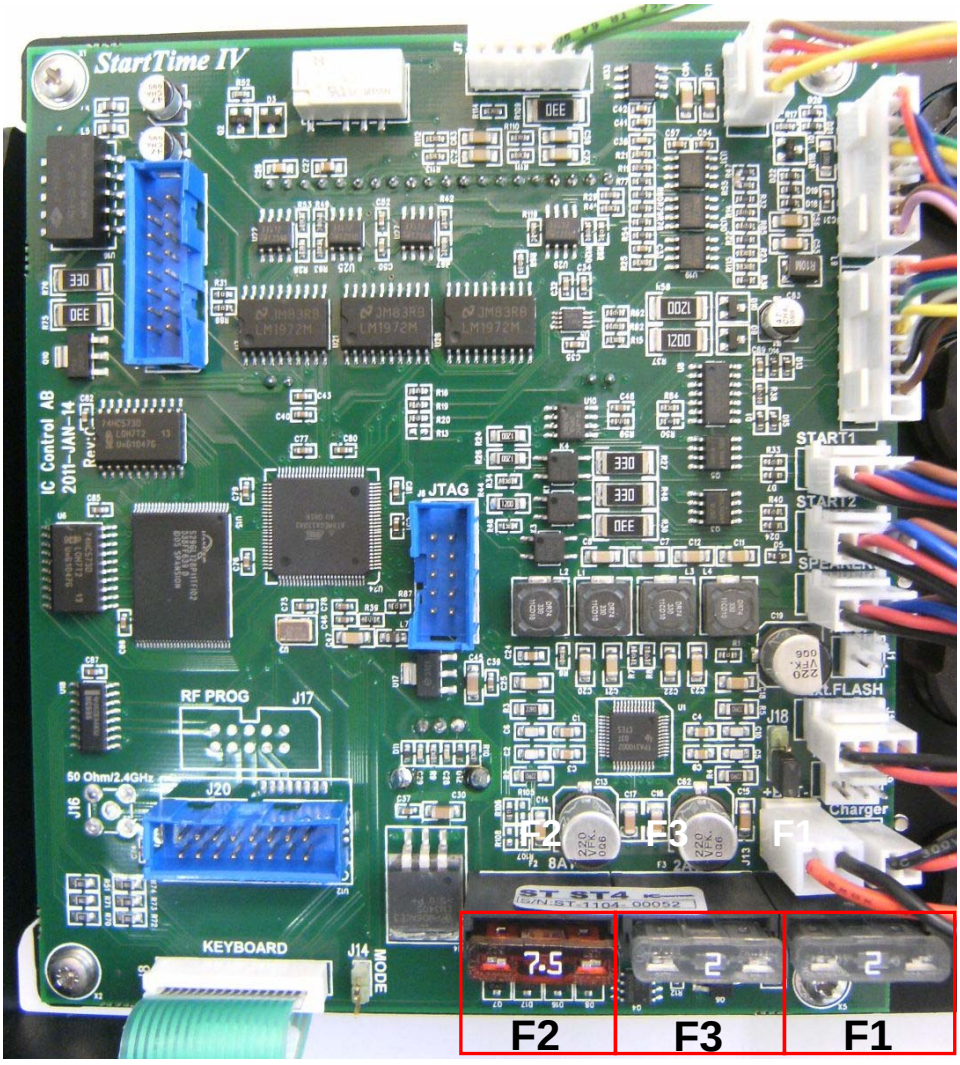


Figure 5 – PCB

8 APPENDIX

8.1 Abbreviations and symbols

Abbreviations	
ST4	*StartTime IV*
SMU	Start & Microphone unit
CUS	Custom
AT	Athletics
AQ	Aquatics
SS	Speed Skating
SW	Swimming
TIMER	Quantum, Chronos, ARES

Symbols	
e-GUN	Electronic gun
	Microphone
	Headset

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Figure 4 - Connecting the installation 5
Figure 5 – PCB 20

8.3 Version history

Version	Date	Modifications since last version
1.0	05/05/11	Initial version
1.1	01/08/11	E-GUN added

NOTES

SWISS TIMING LTD
A COMPANY OF THE SWATCH GROUP

P.O. Box 138, rue de l'Envers 1
2606 Corgémont, Switzerland
www.swisstiming.com

Phone +41 32 488 36 11
Fax +41 32 488 36 09
info@swisstiming.com